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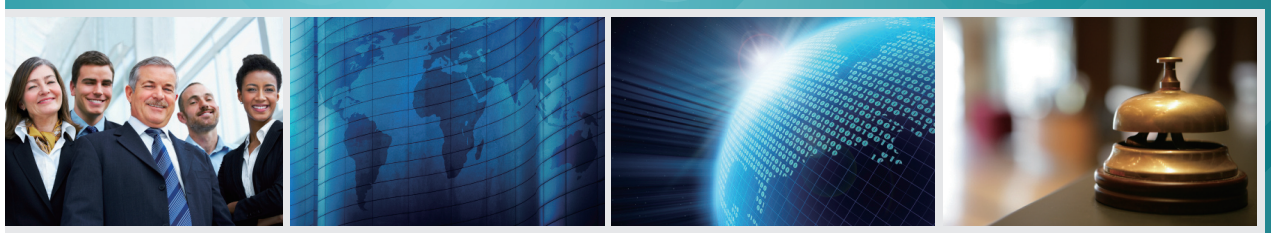

LEC-7110 Preliminary

>>

User's Manual

Publication date:2012-11-09

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About

Overview

Icon Descriptions

The icons are used in the manual to serve as an indication of interest topics or important messages. Below is a description of these icons:

NOTE: This check mark indicates that there is a note of interest and is something that you should pay special attention to while using the product.

WARNING: This exclamation point indicates that there is a caution or warning and it is something that could damage your property or product.

Online Resources

The listed websites are links to the on-line product information and technical support.

Resource	Website
Lanner	http://www.lannerinc.com
Product Resources	http://assist.lannerinc.com
RMA	http://eRMA.lannerinc.com

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Compliances and Certification

CE Certification

This product has passed the CE test for environmental specifications. Test conditions for passing included the equipment being operated within an industrial enclosure. In order to protect the product from being damaged by ESD (Electrostatic Discharge) and EMI leakage, we strongly recommend the use of CE-compliant industrial enclosure products.

FCC Class A Certification

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Chapter 1: Introduction

Thank you for choosing the LEC-7110. The LEC-7110 is Lanner's flagship IPC. It features the Dual Core Intel® Atom™ D2550 processor.

The LEC-7110 is an ideal solution for digital signage and infortainment or self-service kiosk whether it is carried on the public transportation or situated in a public setting .

This all-in-one system is fanless and has a dust-proof case. It can be easily installed at places where space is limited and the weather condition is harsh (268x174x44mm).

The system can be conveniently situated in a place where space is limited and the weather condition is diverse (operating temperature -10 to +55C [with Industrial components] and -5 to +45°C [with commercial components]).

The list shows the versatile connectivity that the device provides:

- Intel integrated Graphics Media Accelerator 3150 which supports VGA (up to 1920x1200) and HDMI with integrated audio and video function (1920 x1200)
- Dual 10/100/1000 Mbps LAN (provided by Intel 82583 Ethernet controller)
- One Mini-PCIe expansion slots (it comes with a SIM card reader that can support 3G Internet)
- Two SATA 2.0 Ports (SATA1 supports SATA DOM connection). It provides storage for photos, videos and other multi- media contents.
- USB x 6 (2 external ports on the back, 2 external ports on the front, and 2 internal pin header)
- COM x 2 (1 is in DB-9 port and the other one is a pin header; both of them are RS-232 compatible.)
- Digital Input/Output (through 2 x 5-pin terminal block)
- Audio input and output connectors (Realtek ALC886 codec)

System Specification

LEC 7 Series		LEC-7110
Dimension (WxHxD)		268x44x174mm (10.55"x1.73"x6.85")
Processor		Intel Atom D2550 1.86GHz
Chipset		Intel NM10
System	Technology	DDR3 SODIMM x1
Memory	Max. Capacity	Up to 4GB
Storage	IDE	None
	SATA	2.5" HDD/SSD drive bay x1, SATA Port for SATA DOMx1
Ethernet Controller		Intel 82583 x2
Graphic Controller		Intel GMA3150
Audio Controller		Realtek ALC886
IO	LAN	GbE RJ45 x2
	Display	DB15 x1 for VGA (1920x1200) HDMI x1 (1920x1200)
	Video Grabber	No
	Audio	RCA x2 for Line-out and Mic-in
	Serial I/O	DB9 x1 for RS232 x1; Pin header for RS232x1
	GPS	No
	Digital I/O	2 x 5-pin terminal block for DI x4 and DO x4 (5V TTL)
	USB 2.0	Type A x4; Internal x2
	Power Input	DC jack with lock
	Expansion	Mini-PCIe x1 with External SIM card reader
	Others	External: Power-on button, 1x SMA antenna hole, reset. Internal: PS/2 keyboard and mouse
Power Input		+12Vdc +/- 5%, ATX mode
AC Adapter		60W +12V @ 5A
Hardware Monitor		Fintek F81865 integrated watch-dog timer 1~255 level
OS Support		Linux , XPE/WES2009, XP PRO FES, WS7E, WS7P, WIN 7 PRO-E
Certifications		CE, FCC Class A
Compliance		No
Operating Temperature Range with Commercial Components		-10 to +55C (with Industrial) -5 to +45C (with commercial)

Chapter 1

Introduction

Package Contents

Your package contains the following items:

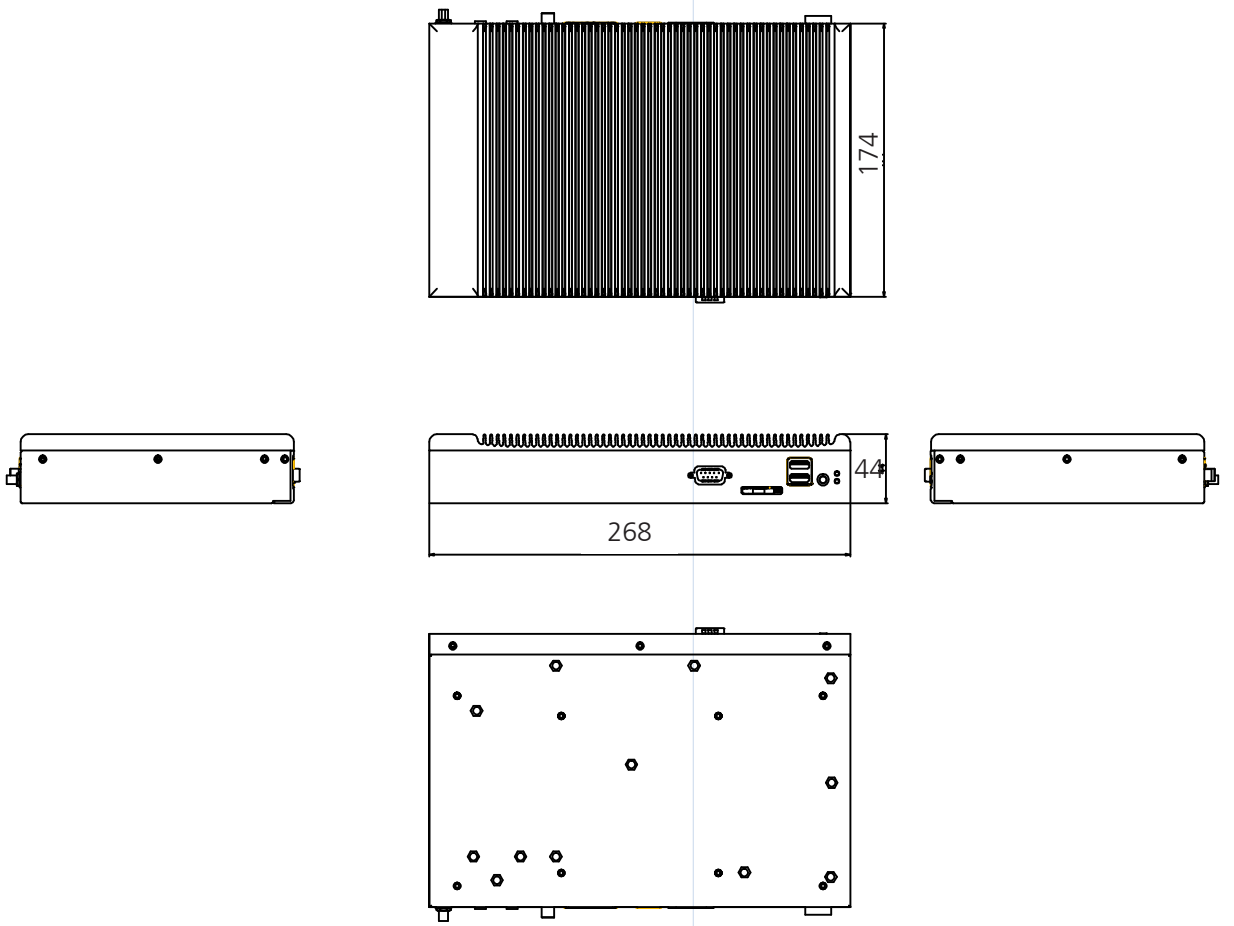
- The LEC-7110 Embedded System
- DC+12V 60W Power Adapter
- Serial-ATA/Power Cable
- Wall-Mounting Kit
- Drivers and User's Manual CD

Chapter 2:
System Components

System Drawing

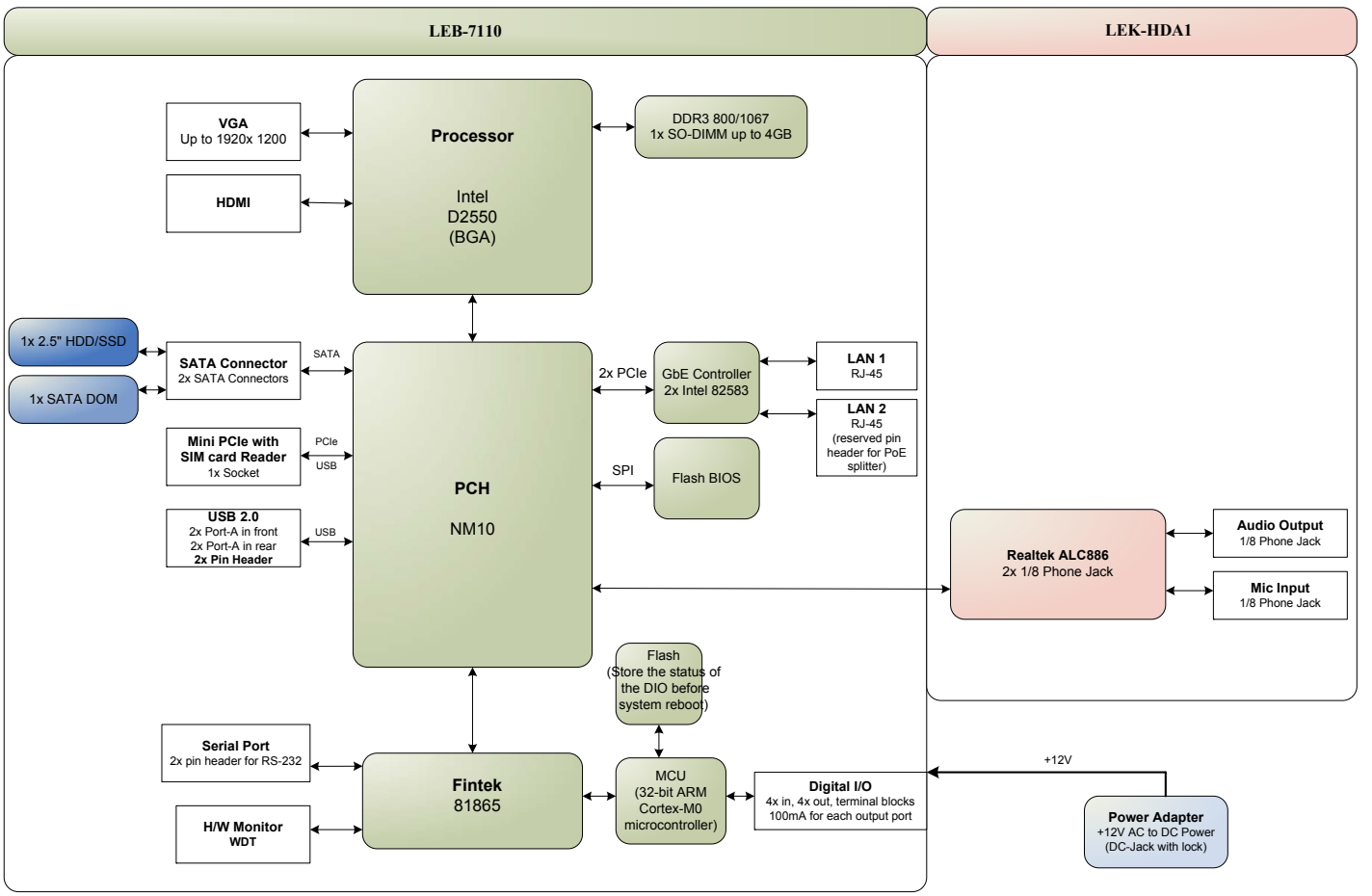
Mechanical dimensions of the LEC-7110

Unit: mm

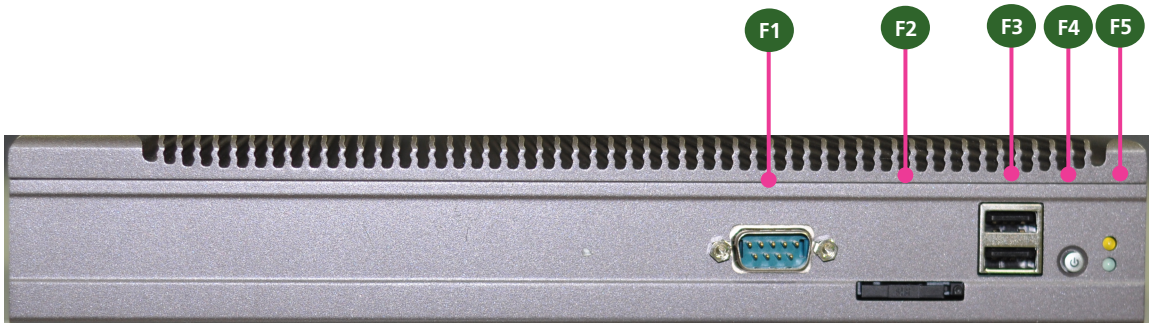


Block Diagram

The block diagram depicts the relationships among the interfaces and modules on the motherboard..

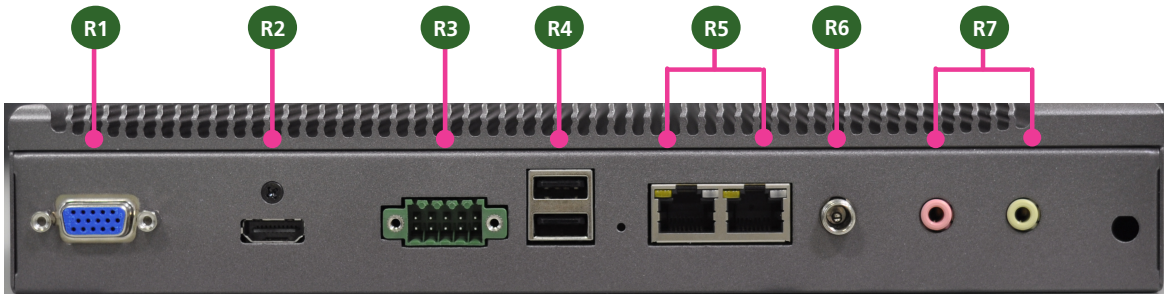


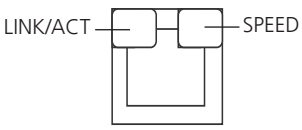
Front Components



Component	Description	Pin Definition Reference
F1 COM Port 1	Serial ports through the DB-9 connector; COM1 supports RS-232 communication protocol. In addition to this port, a pin header is also provided (COM2 in RS-232)	JCOMA1 on page 14
F2 SIM Card Reader	External SIM card reader for wireless 3G connection. To open the reader, Insert the tip of a pointy object (or a small paper clip) into the SIM eject lever on the SIM card reader. Press firmly and push it straight in until the tray pops out.	
F3 Dual USB Stack Connector	An USB type A connector; in addition to this connector, an internal pin header is provided.	USB3 on page 15
F4 Power Button with dual LED	ATX Power-on button with LEDs: Standby mode in Red; Power-on mode in Green	
F5 HDD (Yellow) and Power LED (Green)	HDD • Blinking: data access activities • Off: no data access activities Power • On: The computer is on. • Off: The computer is off .	

Rear Components



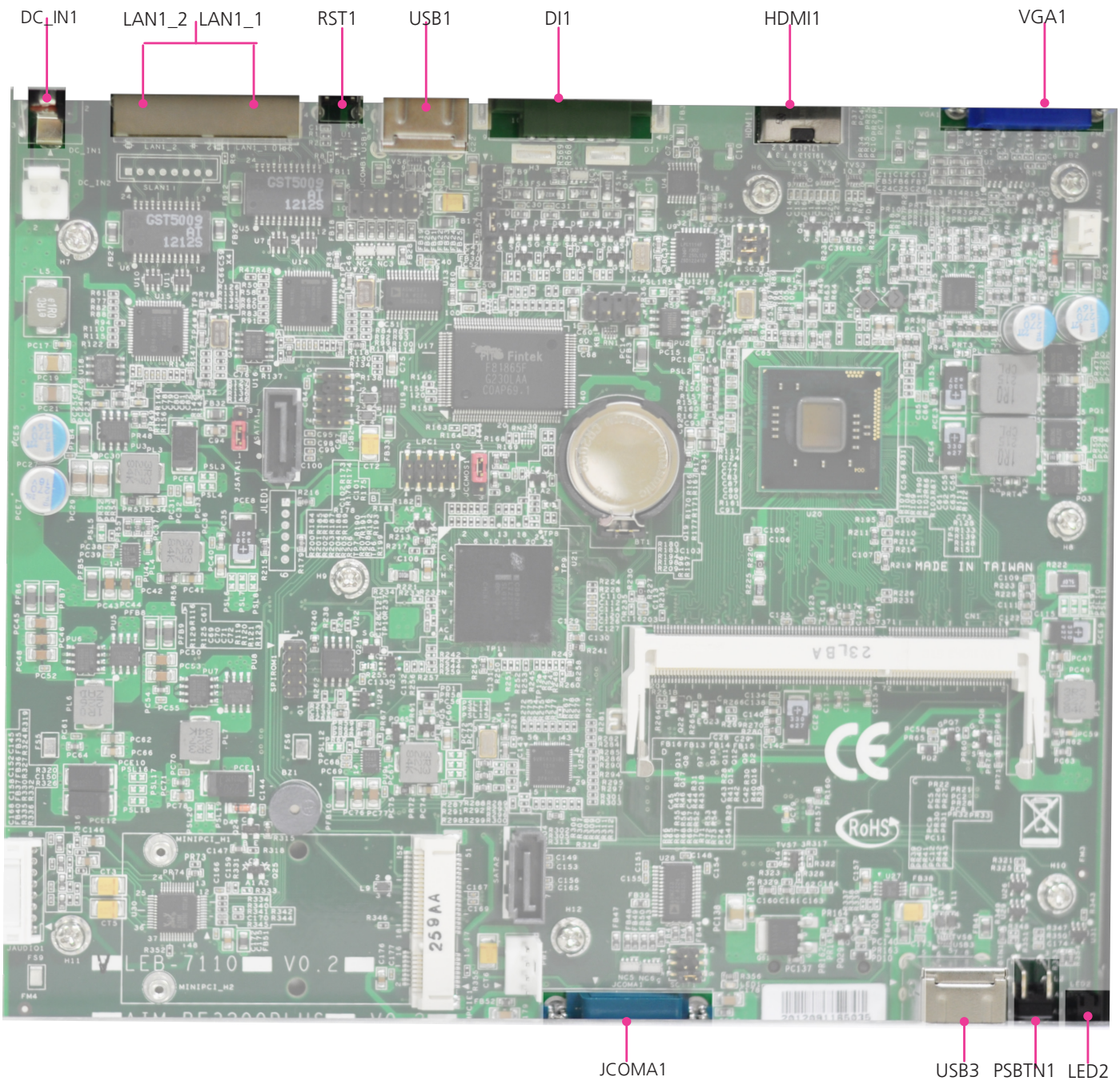
Component	Description	Pin Definition Reference
R1 VGA Port	DB-15 Female Connector for VGA connection (up to 1920x1200).The graphic engine is provided by Intel onboard graphic GMA3150.	VGA1 on page 16
R2 HDMI	An HDMI port which also integrates with an audio output offers maximum resolution up to 1920x1200. The graphic engine is provided by Intel GMA 3150.	HDMI1 Connector on page 16
R3 DIO Port	4 digital input and 4 output ports to support input and output operations. The MCU and its flash will help to retain the DIO last state even when the system reboots or shuts down. Refer to ***Chapter 3 Board Layout*** and ***Appendix B Digital Input/Output*** for DIO control.	DI1 on page 15
R4 Dual USB Stack Connector	An USB type A connector; in addition to this connector, an internal pin header is provided.	USB1 on Page 15
R5 Dual 10/100/1000 LAN Ports 	Two RJ-45 (network) jacks with LED indicators as described below. The LAN ports are provided by Realtek RTL8111. They both support WOL (Wake-on-LAN) and Remote-wake-up. LINK/ACT (Yellow) • On/Flashing: The port is linking and active in data transmission. • Off: The port is not linking. SPEED (Green/Amber) • Amber: The connection speed is 1000Mbps. • Green: The connection speed is 100Mbps • Off: .The connection speed is 10Mbps.	LAN1_1/1_2 on page 13
R6 DC Jack	DC-in 12V power socket with Lock. Only use the power adapter supplied with the LEC-7110 System.	DC_IN1 on page 16

Component	Description	Pin Definition Reference
R1 VGA Port	DB-15 Female Connector for VGA connection (up to 1920x1200).The graphic engine is provided by Intel onboard graphic GMA3150.	VGA1 on page 16
F7 Microphone Port Line-Out Port	The microphone port connects to a microphone. The line-out port connects a headphone or speaker. The audio ports are provided by Realtek ALC886	JAUDIO1 on page 16

Chapter 3: Board Layout

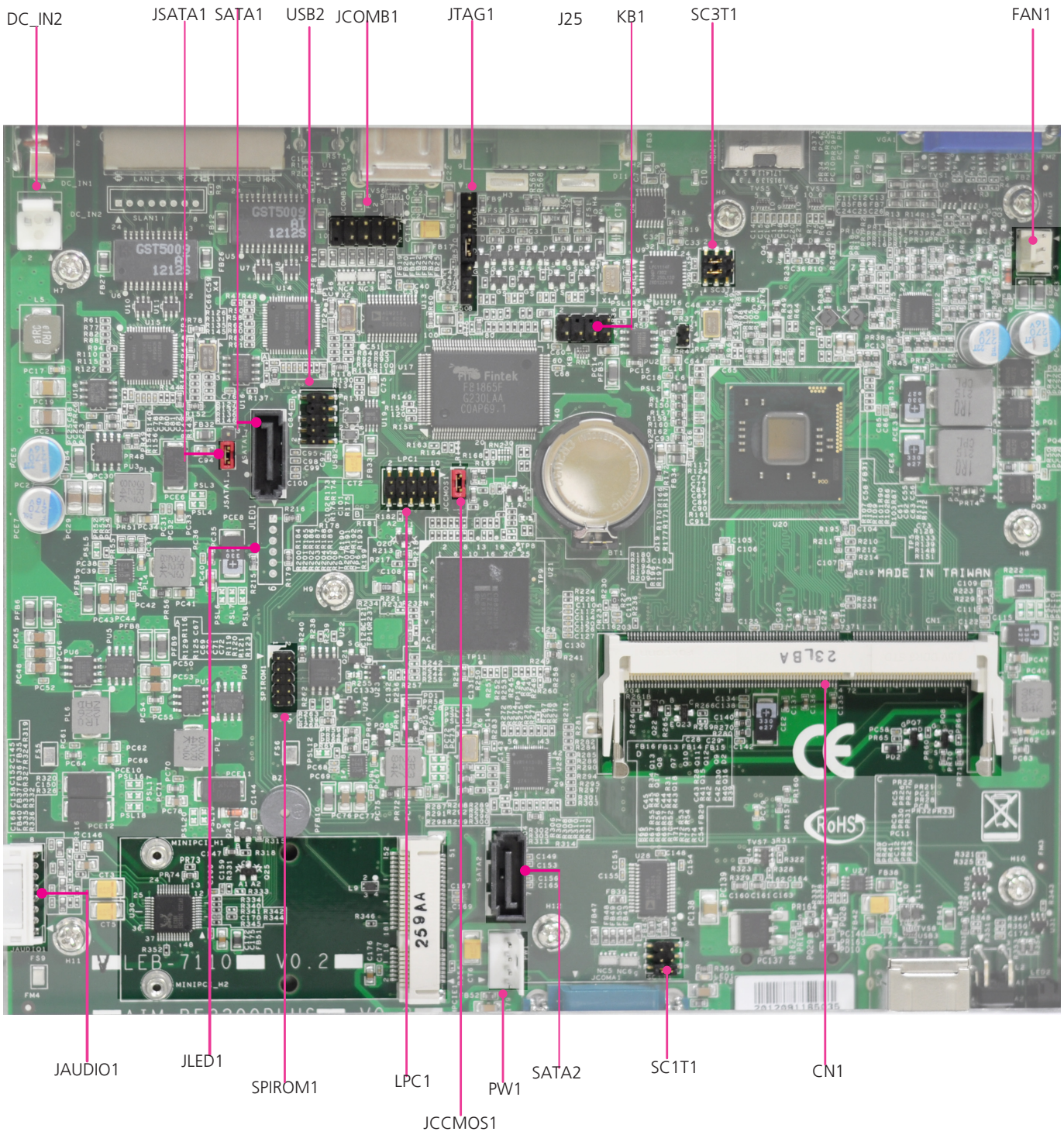
External Connectors

The following picture highlights the location of system input/output connectors. Refer to the table 3.1 Connector List for more details.



Internal Connectors and Jumpers

The following picture highlights the location of internal connectors and jumpers. Refer to the table 3.1 Connector List for more details.



LEB-7110

Connectors and Jumpers List

The tables below list the function of each of the board jumpers and connectors by labels shown in the above section. The next section in this chapter gives pin definitions and instructions on setting jumpers.

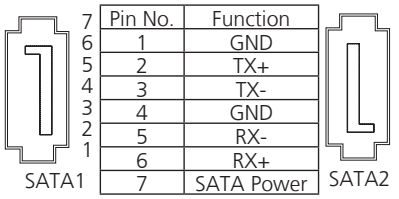
Table 3.1 Connector List for **LEB-7110**

Labels	**Function**	**Pin Definition Reference Page**
DC_IN1	DC Power Jack	P16
DC_IN2	Internal DC_IN Connector	P16
DI1	Digital I/O Connector	P15
HDMI1	High Definition Multimedia Interface	P16
JAUDIO1	Audio Daughter Board Connector	P16
JCCMOS1	CMOS Jumper	P15
JCOMA1	External Serial Port with D-SUB9 Connector(COM1)	P14
JCOMB1	Internal Serial Port with Pin Header (COM2)	P14
JLED1	System Status LED	P16
JSATA1	SATA1 Connector Power Setting	P14
JTAG1	MCU Debug Port	P15
KB1	PS/2 Keyboard & Mouse Connector	P15
LAN1_1/LAN1_2	Dual RJ-45 with LED	P14
LPC1	LPC Interface	Reserved for Factory
MPCIE1	Mini PCI-E Connector	P16
PW1	SATA HDD Power Connector	P14
SATA1	SATA Connector	P14
SATA2	SATA Connector	P14
SC1T1	COMA1 Pin9 Function Selection Jumper	P14
SC3T1	MCU Communication Setting	P15
USB1	Dual Type A USB Connector	P15
USB2	Internal USB Connector with Pin Header	P15
USB3	Dual Type A USB Connector	P15
VGA1	VGA Port with DE-15 Connector	P16

Jumper Settings

LEB-7110

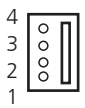
Serial-ATA Connector (SATA1, SATA2): It is for connecting a 2.5" harddisk to be served as your system's storage. It can support SATA II which features Data transfer rates up to 3.0 Gb/s (300 MB/s). ***Note that SATA I supports SATA DOM connection and it has a jumper to switch the powermode of this port.***



Pin No.	Function
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	SATA Power

Pin No.	Function
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	SATA Power

4-pin Serial-ATA Power Connector (PW1): It is for connecting the SATA power cord (for SATA2 connector).

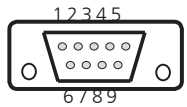


Pin No.	Function
1	+12V
2	GND
3	GND
4	+5V

SATA1Power Mode Selection (JSATA1): The SATA1 interface's pin can be switched by this jumper to supply power to a SATA DOM.

Pin No.	Function
1-2	GND (Default)
2-3	+5V

RS-232 Serial Port COM1 (JCOMA1): It is a RS-232 port through the D-SUB9 connector.



Pin No.	Pin Name	Pin No.	Pin Name
1	Data Carrier Detect (DCDA#)	6	Data Set Ready (DSRA #)
2	Receive Data (RXDA)	7	Request To Send (RTSA #)
3	Transmit Data (TXDA)	8	Clear To Send (CTSA #)
4	Data Terminal Ready (DTRA #)	9	Ring Indicator (RIA #)
5	Ground (GND)		

RS-232 Serial Port COM2 (JCOMB1): It is a RS-232 port with a internal pin header.

Pin No.	Pin Name	Pin No.	Pin Name
1	Data Carrier Detect (DCDB #)	6	Clear To Send (CTSB #)
2	Data Set Ready (DSRB #)	7	Data Terminal Ready (DTRB #)
3	Receive Data (RXDB)	8	Ring Indicator (RIB #)
4	Request To Send (RTSB #)	9	Ground
5	Transmit Data (TXDB)	10	KEY

COMA1 Pin 9 Function Selection (SC1T1): The Pin No. 9 of RS-232 can be altered to supply power. J

SC1T1

RS-232 Pin 9 Function	JP1, JP2
+5V	1-2
+12V	3-4
RI#(Default)	5-6

LAN1_1/LAN1_2: Dual RJ-45 with LED: The LAN ports are provided by Intel 82583 Ethernet Controllers. The following lists its main features:

- The Preboot eXecution Environment (PXE) remote boot support
- TCP segmentation offload
- TCP, UDP, IPv4 checksum offload
- Supports IEEE 802.1Q VLAN tagging

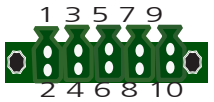
Pin No.	Description	
	Fast Ethernet	Gigabit Ethernet
1	TX+	MD0+
2	TX-	MD0-
3	RX+	MD1+
4	T45	MD2+
5	T45	MD2-
6	RX-	MD1-
7	T78	MD3+
8	T78	MD3-
9	10-/100-/1000+	
10	10+/100+/1000-	
11	Link+/ACT-	
12	Link-/ACT+	

Clear CMOS jumper (JCCMOS1): It is for clearing the CMOS memory.

Pin No.	Pin Name
1-2	Normal (Default)
2-3	Clear CMOS

Digital I/O (DI1)

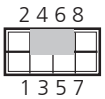
Digital IN/OUT(DIO1) Connector: The 8 pins of digital Input/Output (GPIO) support input and output operations through the 2x5-pin terminal block.



Pin No.	Pin Name	Pin No.	Pin Name
1	Input0	2	Output0
3	Input1	4	Output1
5	Input2	6	Output2
7	Input3	8	Output3
9	GND	10	GND

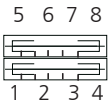
TTL Level is +5V; Maximum input/output current for each port is 100mA			
Input/Output	Voltage	Logic	Register
	0~0.7V	Low	0
	2~5V	High	1
The output default value is 1			

PS/2 Keyboard and Mouse (KB1)



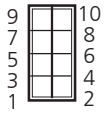
Pin No.	Description	Pin No.	Description
1	VCC	2	MSCLK
3	MSDATA	4	KEY
5	KBDATA	6	KEY
7	GND	8	KBCLK

Dual USB Type A Connector (USB1/USB3):



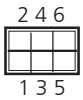
Pin No.	Pin Name
1	USB_VCC1
2	-USB
3	+USB
4	GND
5	USB_VCC2
6	-USB
7	+USB
8	GND

USB 2.0 Pin Header (USB2):



Pin No.	Pin Name	Pin No.	Pin Name
1	USB_VCC	2	GND
3	KEY	4	+USB
5	-USB	6	-USB
7	+USB	8	KEY
9	GND	10	USB_VCC

MCU Communication Setting (SC3T1): MCU communication setting jumper



PIN NO.	DESCRIPTION
1-3 2-4	Internal RS232(COM3) (default)
3-5 4-6	From JTAG1 RS232 (debug only)

MCU Debug Port (JTAG1): The MCU is provided by NXP's LPC1110 which is a ARM-Cortex-M0 based, low-cost 32-bit microcontroller for 8/16-bit applications. It has a 4 KB on-chip flash programming memory. The MCU and its flash will help to retain the DIO last state even when the system reboots or shuts down.

Pin No.	Pin Name	Debug Tools
1	ICE_DATA	FOR ICE Debug
2	ICE_CLK	
3	ICE_RST#	
4	GND	
5	MCU_PRO	
6	MCU_VCC	
7	ICE_RX	For Ext RS232
8	ICE_TX	

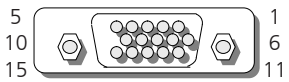
Mini PCI-Express Connector 1(MPCIE1): It comes with a SIM card reader (externally accessible on the front panel) to support wireless 3G service.

PIN	Pin Name	PIN	Pin Name
1	WAKE#	2	+3.3V
3	RSVD	4	GND
5	RSVD	6	+1.5V
7	CLKREQ#	8	UIM_PWR
9	GND	10	UIM_DATA
11	REFCLK-	12	UIM_CLK
13	REFCLK+	14	UIM_RESET
15	GND	16	UIM_VPP
Key			
17	RSVD	18	GND
19	RSVD	20	W_DISABLE#
21	GND	22	PERST#
23	PERn0	24	+3.3V
25	PERp0	26	GND
27	GND	28	+1.5V
29	GND	30	SMB_CLK
31	PETn0	32	SMB_DATA
33	PETp0	34	GND
35	GND	36	USB_D+
37	GND	38	USB_D-
39	+3.3V	40	GND
41	+3.3V	42	LED_WWAN#
43	GND	44	LED_WLAN#
45	RSVD	46	LED_WPAN#
47	RSVD	48	+1.5V
49	RSVD	50	GND
51	RSVD	52	+3.3V

System Status LED (JLED1)

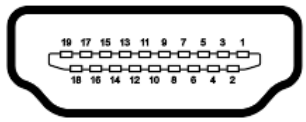
Pin No.	Pin Name
1	HDD_LED-
2	HDD_LED+
3	3G_LED-
4	3G_LED+
5	PWR_LED-
6	PWR_LED+

DE-15 VGA Connector (VGA1): The graphic function is powered by the integrated Intel GMA 3150**.**



Pin No.	Description	Pin No.	Description
1	CRT-R	6	GND
2	CRT-G	7	GND
3	CRT-B	8	GND
4	N.C	9	VCC
5	GND	10	GND
Pin No.	Description		
11	N.C		
12	V_SDAT		
13	HSYNC		
14	VSYNC		
15	V_SCLK		

High-Definition Multimedia Interface (HDMI1): High-Definition Multimedia Interface



Pin No.	Description	Pin No.	Description
1	DATA2+	2	GND
3	DATA2-	4	DATA1+
5	GND	6	DATA1-
7	DATA0+	8	GND
9	DATA0-	10	CLK+
11	GND	12	CLK-
13	N.C	14	N.C
15	DDC CLK	16	DDC DAT
17	GND	18	HDMI_VCC
19	HPD		

DC Power JackK (DC_IN1)

Pin No.	Description
1	DC_IN (+)
2	DC_IN (-) / GND

Internal DC In Connector (DC_IN2)

Pin No.	Description
1	DC_IN (+)
2	DC_IN (-) / GND

Audio Daughter Board Connector (JAUDIO1): It is for connecting the daughter board to support the Microphone and Line-in port.

Pin No.	Description
1	LINE_OUT_R
2	GND
3	GND
4	LINE_OUT_L
5	MIC_R
6	GND
7	GND
8	MIC_L

Chapter 4: Hardware Setup

Preparing the Hardware Installation

To access some components and perform certain service procedures, you must perform the following procedures first.

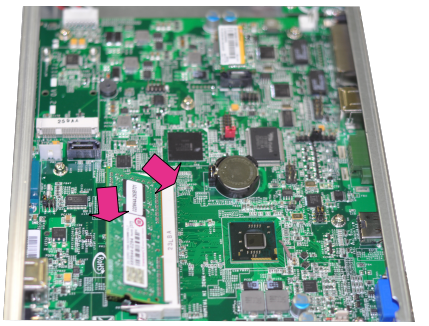
WARNING: To reduce the risk of personal injury, electric shock, or damage to the equipment, remove the power cord to remove power from the server. The front panel Power On/Standby button does not completely shut off system power. Portions of the power supply and some internal circuitry remain active until AC power is removed.

1. Unpower the LEC-7110 and remove the power cord.
2. Unscrew the 3 threaded screws on both sides of the top cover of the LEC-7110 System.
3. Slide the cover backwards and open it.

Installing the System Memory

The motherboard supports DDR3 memory. It comes with one Double Data Rate (DDR3) Small Outline Dual Inline Memory Modules (SO-DIMM) sockets.

1. Align the SO-DIMM connector key with the SO-DIMM socket key.
2. Install the SO-DIMM.



Note:

1. The motherboards can support up to 4 GB memory capacity in maximum.

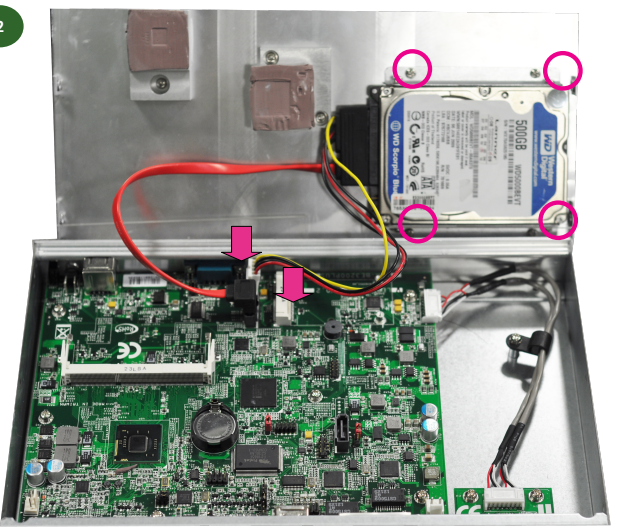
Installing the Hard Disk

The system can accommodate two Serial-ATA disks. Follow these steps to install a hard disk into the LEC-7110:

1. Unscrew the 4 screws on the hard disk tray to take out the hard disk tray from the system.
2. Place hard disk on the hard disk tray and align the holes of the hard disk with the mounting holes on the tray.
3. Secure the hard disk with 4 mounting screws on the hard disk tray.
4. Connect the Serial-ATA cable to the hard disk.
5. Plug the Serial-ATA power and data cables to the Serial-ATA power and data connectors on the main board.
6. Put the hard disk tray with the installed hard disk back to the system and secure it with mounting screws.

1

2

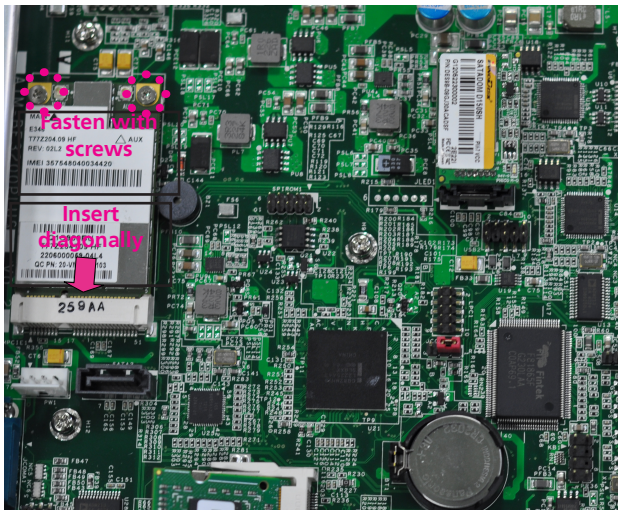


Installing the 3G SIM Card

1. Open the SIM tray by inserting the tip of a pointy object (or a small paper clip) into the SIM eject lever.
2. Press firmly and push it straight in until the tray pops out.
3. Pull out the SIM tray and place the SIM card in the tray. The angled corner of the SIM ensures that the card fits only the correct way in the tray.
4. With the tray aligned as shown, carefully replace the SIM tray containing the SIM card in the system.

Installing the Wireless 3G module

1. Align the wireless module's key with the Mini-PCIe slot notch.
2. Insert the wireless module into the connector diagonally.
3. Fasten the wireless module to the board with the screws (Use the Mini-PCIe module screws contained within the package).

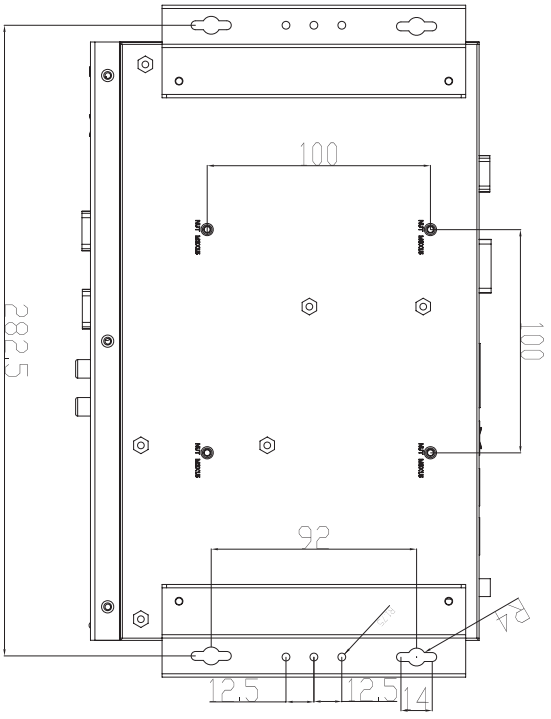


Wall Mounting

The product ships with wall mounting kit. To mount your product on the wall, follow the instructions below:

1. First make a hole for the anchor in the surface on the wall.
2. Then press the anchor into the hole until it is flush with the surface. You may need a hammer to tap the wall anchor.
3. Use a screwdriver to screw the threaded screw into the plastic anchor.
4. Attach the wall mounting bracket to the back of the device, securing it in place with four of the flat-head screws provided.
5. Hang the device on the wall.

Unit: mm



Appendix A: Programming Watchdog Timer

A watchdog timer is a piece of hardware that can be used to automatically detect system anomalies and reset the system (or one pair of network ports in bypassed state; However, only one function can be activated at a time.) in case there are any problems. Generally speaking, a watchdog timer is based on a counter that counts down from an initial value to zero. The software selects the counter's initial value and periodically restarts it. Should the counter reach zero before the software restarts it, the software is presumed to be malfunctioning and the processor's reset signal is asserted. Thus, the processor will be restarted as if a human operator had cycled the power.

For sample watchdog code, see *wd_bp* folder under Driver and Utility on the *Driver and Manual CD*

Executing the commands through the Command Line:

1. wd_tst --swtsr (Set Watchdog Timeout State to Reset)
2. wd_tst --swt xxx (Set Watchdog Timer 1-255 seconds)
3. wd_tst[*] --start (Start Watchdog Timer)
4. wd_tst --stop (Stop Watchdog Timer)

The following procedures are required for running the watchdog program on DOS, Linux and FreeBSD.

Note:

1. For DOS environment, use DJGPP as compiler and the makefile: Makefile.dos.
2. For Linux, support kernel versions are 2.4.x and 2.6.x. Use the makefile:Makefile.linux.
3. For FreeBSD, support version is FreeBSD 8.0. Use the makefile: Makefile.

Build

To build program source code on Linux platform, use the following steps as a guideline:

1. Copy the proper makefile from the Driver and Manual CD to your system
2. Set the access mode with these two parameters by editing the Makefile.linux directly: DIRECT_IO_ACCESS= [0|1] (enter either 1 or 0) and LANNER_DRIVER= [0|1] (enter either 1 or 0). 1 is for direct access and no driver is needed. You will only need to execute the program directly. However, when it equaled to 0, driver installation is needed. Refer to the following Install section for more details.
3. Type make to build source code:

   make Makefile (Note: omit the file extensions)

After compiled, the executable program (bpwd_tst) and the driver (bpwd_drv.ko) will be in the bin subdirectory.

Install on the Linux and FreeBSD

The installation procedures depend on the access mode that you have set by using the above mentioned method.

If you have set DIRECT_IO_ACCESS=1, driver installation is not necessary. Proceed to the next section on executing

If you have set DIRECT_IO_ACCESS=0, Lanner bypass driver needs to be installed. Install the driver and create a node in the /dev directory as shown in the following example:

For Linux:

Insert module and create node in /dev as below example:

#insmod wd_drv.[k]o

#mknod /dev/wd_drv c 241 0

For FreeBSD:

Insert module as below example:

#kldload -v ./wd_drv.ko

Execute

wd_tst --swtsb (Set Watchdog Timeout State to Bypass function)

wd_tst --swtsr (Set Watchdog Timeout State to Reset function)

wd_tst --swt *xxx* (Set Watchdog Timer 1-255 seconds)

wd_tst[*] --start (Start Watchdog Timer)

wd_tst --stop (Stop Watchdog Timer)

Note:

1. wd_tst --start will not be available if

DIRECT_IO_ACCESS=1, use the command: "./wd_tst --swt xxx" to start the watchdog timer instead .

2. Watchdog timer can support two functions, - system rest or LAN bypass. However, only one function can be activated at a time. You should modify the code or switch it to the desired state/function accordingly.
3. For more details, refer to the README file

Install on the Windows

Refer to Appendix A: Digital Input/Output for Lanner GPIO driver installation.

Appendix B: Digital Input/Output

The Digitanl I/O on the rear panel is designed to provide the input and output operation for the system. For sample DIO code, see DIO folder under LEC-7110 Utility in the *Driver and Manual CD*.

Execute

Via the Command Line

Specific to the PCH chipset used or Super IO chipset, the commands and functionality vary by product models. For more information, refer to the README or User Guide contained within the utility folder.

For example: Here we have Fintek F81865 with a Microcontroller for the GPIO utility, to execute, follow the command description below:

The Lanner F81865/MCU GPIO utility for Digital Input/ Output----------

Usage:

ioa3_dos "get input_state decimal value of port" ***(get the high/low state of the specified input port)***

"get output_state decimal value of port" ***(get the high/low state of the specified output port)***

"set output_state decimal value of port" ***(set the high/low state of the specified port)***

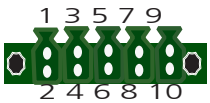
"invert input_state/output_state decimal value of port "***(change the state of the port from high to low or low to high)***

"input_voltage_min" ***(get the system's minimally allowed voltage level)***

"input_voltage"***(get the current system voltage level)***

Argument:

The decimal value of port is calculated as shown in the following table:



Pin No.	Pin Name	binary representation	decimal representation
1	Input0	1000	8
3	Input1	0100	4
5	Input2	0010	2
7	Input3	0001	1
9	GND		

Pin No.	Pin Name	binary representation	decimal representation
2	Output0	1000	8
4	Output1	0100	4
6	Output2	0010	2
8	Output3	0001	1
10	GND		

For instance, to get the input state of the DI_1 and DI_2, type:

ioa3_dos "get input_state 6"

Likewise, to get the output state of the DO_1 and DO_2, type:

ioa3_dos "get output_state 6"

The default value for output port is 1 which indicates the high voltage (5V).

Note: For more information on Lanner DIO and other platform management utilities such as installation on the Linux and FreeBSD, download the user manual at the Lanner support website at:

http://assist.lannerinc.com/modules/wfdownloads/viewcat.php?cid=90/

Appendix C: Terms and Conditions

Warranty Policy

1. All products are under warranty against defects in materials and workmanship for a period of one year from the date of purchase.
2. The buyer will bear the return freight charges for goods returned for repair within the warranty period; whereas the manufacturer will bear the after service freight charges for goods returned to the user.
3. The buyer will pay for repair (for replaced components plus service time) and transportation charges (both ways) for items after the expiration of the warranty period.
4. If the RMA Service Request Form does not meet the stated requirement as listed on "RMA Service," RMA goods will be returned at customer's expense.
5. The following conditions are excluded from this warranty:

Improper or inadequate maintenance by the customer Unauthorized modification, misuse, or reversed engineering of the product Operation outside of the environmental specifications for the product.

RMA Service

Requesting a RMA#

1. To obtain a RMA number, simply fill out and fax the "RMA Request Form" to your supplier.
2. The customer is required to fill out the problem code as listed. If your problem is not among the codes listed, please write the symptom description in the remarks box.
3. Ship the defective unit(s) on freight prepaid terms. Use the original packing materials when possible.
4. Mark the RMA# clearly on the box.

Note: Customer is responsible for shipping damage(s) resulting from inadequate/loose packing of the defective unit(s). All RMA# are valid for 30 days only; RMA goods received after the effective RMA# period will be rejected.

Appendix C

RMA Service Request Form

When requesting RMA service, please fill out the following form. Without this form enclosed, your RMA cannot be processed.

RMA No:	Reasons to Return: □ Repair(Please include failure details) □ Testing Purpose
Company:	Contact Person:
Phone No.	Purchased Date:
Fax No.:	Applied Date:
Return Shipping Address: _____	
Shipping by: □ Air Freight □ Sea □ Express_____ □ Others:_____	

Item	Model Name	Serial Number	Configuration

Item	Problem Code	Failure Status

*Problem Code:

01:D.O.A.	07: BIOS Problem	13: SCSI	19: DIO
02: Second Time R.M.A.	08: Keyboard Controller Fail	14: LPT Port	20: Buzzer
03: CMOS Data Lost	09: Cache RMA Problem	15: PS2	21: Shut Down
04: FDC Fail	10: Memory Socket Bad	16: LAN	22: Panel Fail
05: HDC Fail	11: Hang Up Software	17: COM Port	23: CRT Fail
06: Bad Slot	12: Out Look Damage	18: Watchdog Timer	24: Others (Pls specify)

Request Party

Authorized Signature / Date

Confirmed By Supplier

Authorized Signature / Date